CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 86-62

WASTE DISCHARGE REQUIREMENTS
(SITE CLEANUP REQUIREMENTS) FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION
SAN JOSE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. Fairchild Semiconductor Corporation, hereinafter called the discharger, operated and owned a facility that manufactured electronic devices at 101 Bernal Road in the City of San Jose (Attachment 1). Construction of the facility began in 1975 and was completed in 1977 on land used for agricultural purposes. The facility was operated from April 1977 to October 1983. The discharger still owns the facility, but has ceased using the facility for manufacturing or for storing chemicals.

2. Chemicals handled, repackaged, and stored in bottles and drums on the site included 1,1,1 trichloroethane (TCA), xylene, acetone, isopropanol (IPA), and Freon. These chemicals were used in the wafer manufacturing process. The waste solvents were then collected and stored in two underground tanks (5,940 gallon and 550 gallon) or in 55 gallon drums for eventual disposal by a licensed chemical waste hauler.

3. The geology in the vicinity of the facility consists of alluvium extending below the ground surface to bedrock a depth of approximately 330 to 360 feet. This alluvial formation generally contains four distinct sand and gravel aquifers which are separated by silt and silty clay layers which vary from a few feet to 60 feet in thickness. These aquifers are referred to as A, B, C and D aquifers with A being the most shallow. The general depth of these aquifers below ground surface are as follows: A occurs between 30 to 50 feet, B lies between 60 and 100 feet, C is between 150 and 190 feet and D is between 220 and 270 feet. In some locations, these individual aquifers merge or are absent. Also, these aquifer depths are very general; a major portion of the facility lies above the top of the A aquifer by only 10 to 15 feet.

4. On November 25, 1981, the discharger discovered 2900 ppb and 7600 ppb of 1,1,1-trichloroethane in groundwater from two monitoring wells installed during a search for residues from a cracked acid neutralization pipeline. On December 4, 1981, during its investigation concerning the source of the solvents, the discharger discovered through excavation of soil from around the 5,940-gallon waste organic solvent tank, that the tank had failed causing the release of organic solvents to soil and groundwater. On the same date, the discharger reported the waste organic solvent tank failure to Regional Board staff. On December 7, 1981, the discharger discovered 1,1,1-TCA concentrations above drinking water action levels in a drinking water supply well (Great Oaks Well No. 13) located about 1800 feet downgradient of the failed tank. Great Oaks Well No. 13 was taken out of service as a drinking water supply well on December 7, 1981, and has not been used as a source of drinking water since that date. On December 10, 1981, the discharger installed a monitoring well immediately adjacent to the previous location of the removed waste solvent tank. Chemical analyses indicated that the soil in the well boring contained up to 86,000 ppb 1,1,1-TCA. Subsequent reports submitted by the discharger reported on May 11, 1982 indicate that approximately 58,400 gallons of a mixture of 1,1,1-TCA, xylene, Freon, IPA, and acetone were released from the failed tank. The discharger estimated that the release began occurring in May 1980 until the defective tank was removed and replaced on December 4, 1981.

5. Five municipal and 22 private water wells are known to exist as active or potentially active wells within a one mile radius up and down gradient around the site. Only four existing water wells were found to contain solvents from the failed tank release. These are the only four known water supply wells which have been contaminated by the release. The only public drinking water supply well impacted by the organic solvent waste tank failure was Great Oaks Well No. 13, which was taken out of service as of December 7, 1981. The remaining three water wells are described as being irrigation wells. After Great Oaks Well No. 13 was taken out of service, the average concentration of 1,1,1-TCA detected in the well was 5800 ppb in a concentration range of 4500 to 7000 ppb 1,1,1-TCA in thirty-three samples analyzed over a two month time period. None of the other solvents held in the failed waste organic solvent tank have been detected in Great Oaks Well No. 13. Currently, as a result of clean-up measures undertaken by the discharger, less than 100 ppb TCA is present in Great Oaks Well No. 13 and in the three private irrigation wells.

6. The discharger has installed more than 90 wells to aid in plume characterization, source control, and cleanup. Currently, 46 on-site and 60 off-site observation and recovery wells are monitored for synthetic organic chemicals. Monitoring results indicate that the pollutant plume is present in groundwater on and off-site and is currently under hydraulic control. The plume measures about 4,560 feet (0.86 miles) in length extending northwesterly from the former waste solvent tank location and is less than 214 feet in depth. At this time, the plume appears to be present in and is adequately defined in the A, B, and C aquifers. Low concentrations of TCA had been found in the two aquifer specific monitoring wells completed in the D aquifer. However, since September 1985, volatile organic chemicals

have not been detected in these wells. The discharger may be required to perform additional plume characterization if potential vertical conduits are discovered in the area. As a result of an initial search for wells which could act as potential vertical conduits, the discharger located four wells, two of which were sealed by the discharger and the remaining two sealed at the suggestion of the discharger.

7. Activities to prevent further solvent migration from the source area included removal of the defective tank and of soil and groundwater containing solvents and installation of a slurry wall. On December 4, 1981, the discharger removed the defective 5,940-gallon tank from service and replaced it with an above ground 1000-gallon tank. On December 7, 1981, the 5,940-gallon tank was removed. In January 1982, the discharger was allowed to operate Great Oaks Well No. 13 solely to intercept a portion of the plume and prevent additional plume migration. The discharger has removed 3,389 $yd^3$ of soil from 50 feet by 65 feet in plan and 52 feet deep in the area of the former waste tank. Additionally, along the entire perimeter of the facility's property boundary, the discharger has constructed a three percent soil-bentonite slurry wall which is three feet wide and 70 to 140 feet deep extending through both the A and B aquifers and is keyed a minimum of two feet into the BC aquitard. The slurry wall was completed on May 30, 1986.

8. Interim remedial measures to cleanup the plume include offsite and onsite groundwater extraction and an on-site "A" Aquifer Flushing Program. The flushing program operated from March 1984 to December 1984 and consisted of recovery/injection wells which injected clean water into surrounding subsoils to flush out solvents. The program was discontinued before the slurry wall installation due to lack of hydraulic control of solvent migration in the A aquifer which resulted from clean water injection. The discharger has installed and currently operates four tiers of a five tiered groundwater extraction well system composed of a total of 18 extraction wells located throughout the plume. As of April 1986, 9 wells were extracting groundwater for cleanup of the solvent plume. Operation of the extraction wells has prevented further plume migration, reduced the size of the plume, and reduced solvent concentrations within the plume.

9. The extracted groundwater has been either collected in tanks and hauled to a disposal site or discharged before or after treatment to storm drains leading to Canoas Creek. The outfall concentrations ranged from 600 ppb TCA initially to 7 ppb TCA currently which is within limits provided by the discharger's NPDES permit. The discharger has submitted a proposal to study the effects of discharging synthetic organic chemicals to Canoas Creek on groundwaters which may be recharged by the creek.

10. At the request of the Regional Board staff, the discharger filed a report of waste discharge to the Regional Board on January 8, 1985 for this release of solvents.

11. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.

12. The beneficial uses of the groundwaters are:

    municipal and domestic water supply
    industrial service and process water supply
    agricultural water supply

13. This project constitutes a minor modification to land and such activity is thereby exempt from the provisions of the California Environmental Quality Act (CEQA) in accordance with Section 15304 of the Resources Agency Guidelines.

14. The Board has notified both dischargers and interested agencies and persons of its intent to prescribe waste discharge requirements for implementing remedial measures and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

15. The Board, in a public meeting, heard and considered all comments pertaining to the Waste Discharge Requirements.

IT IS HEREBY ORDERED, that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or affect the beneficial uses of waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants or adversely spread any pollutants from other sites is prohibited.

B. Specifications

1. The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The discharger shall conduct monitoring activities as needed to define the local hydrogeological conditions, and the lateral and vertical extent of the soil and groundwater pollution in and contiguous to the zone of known pollution. Should monitoring results show evidence of plume migration, additional plume characterization shall be required.

C. Provisions

1. The discharger shall submit to the Board technical reports on self-monitoring work performed according to a program approved by the Executive Officer.

2. All samples shall be analysed by State certified laboratories using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

3. In order to comply with Prohibition 2, the discharger shall submit by December 30, 1986 a technical report acceptable to the Executive Officer containing an evaluation of their investigation of potential vertical conduits of groundwater containing organic chemicals.

4. In order to comply with Prohibition 2, the discharger shall complete the following tasks and submit technical reports documenting compliance according to the following time schedule for the area on-site.

| TASKS | COMPLETION DATES |
|---|---|
| a. Submit a technical report acceptable to the Executive Officer describing a plan for operating, maintaining, and monitoring the slurry wall. | October 1, 1986 |
| b. Submit a technical report containing an evaluation of interim remedial measures alternatives and recommending an interim remedial measure plan acceptable to the Executive Officer. | October 1, 1986 |
| c. Submit a technical report acceptable to the Executive Officer documenting construction and implementation of interim remedial measures. | April 2, 1987 |

5. In order to comply with Prohibition 1, the following information will be submitted by the discharger in technical reports acceptable to the Executive Officer for Board consideration according to the following time schedule for each designated area.

| TASK | COMPLETION DATES ON SITE | OFF SITE |
|---|---|---|
| Submit a technical report containing an evaluation of the effectiveness of the interim cleanup measures, an evaluation of alternative final remedial measures and a recommendation on which additional measures if any should be implemented. | February 2, 1988 | February 2, 1987 |

The technical report's evaluation of final remedial measures will include a projection of each measure's cost, effectiveness, benefits, and impact on public health and welfare and the environment and will

be based upon Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), upon Section 25356.1 (c) of the California Health and Safety Code, and CERCLA guidance documents.

6. The dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

   a. Entry upon premises in which any organic solvent sources exist, or may potentially exist, or in which any required records are kept.

   b. Access to copy any records required to be kept under terms and conditions of this Order.

   c. Inspection of any monitoring equipment or methods required by this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible as part of any investigation or remedial action program, to the dischargers.

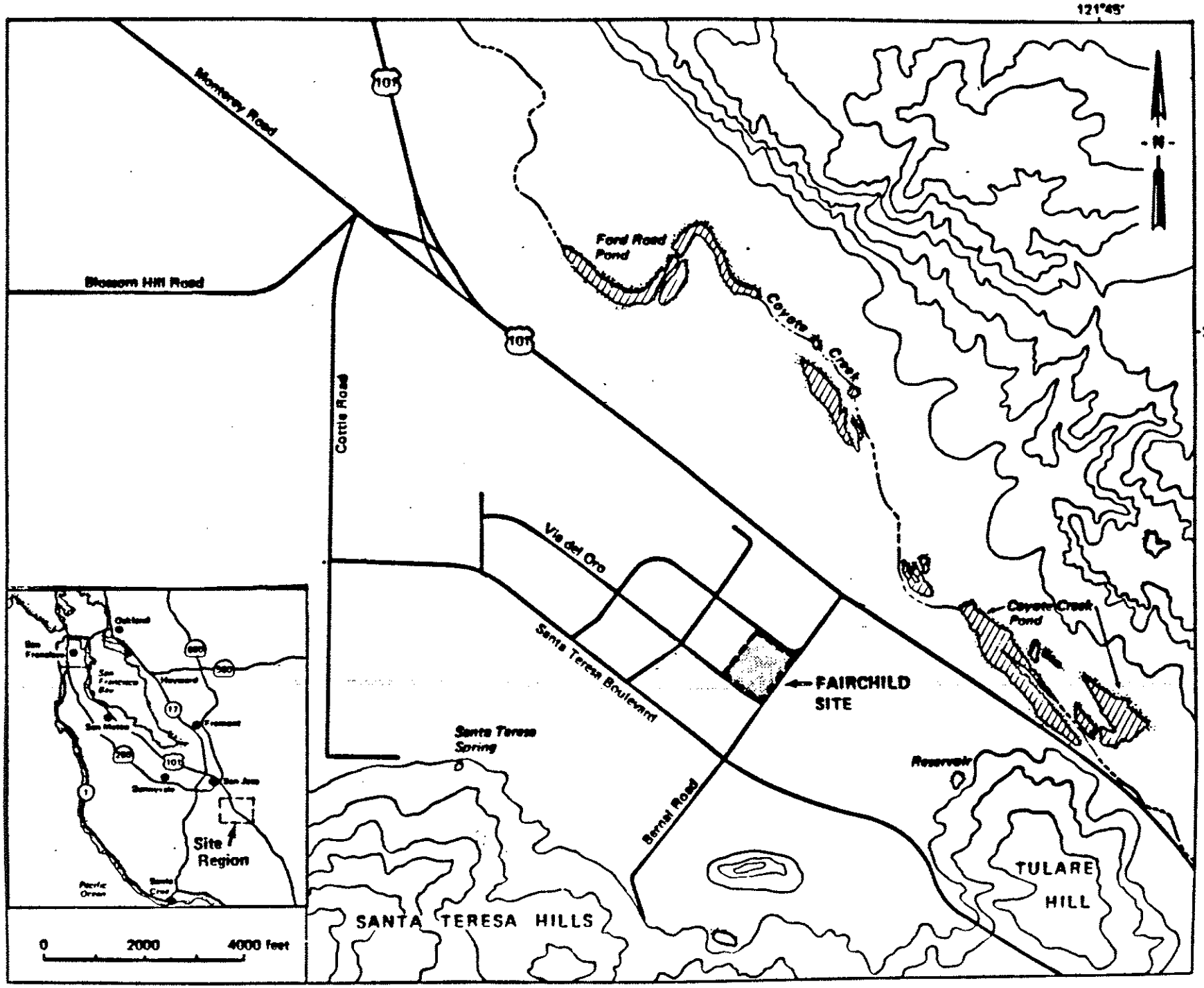
7. The dischargers shall maintain in good working order and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

8. The Board will review this Order periodically and may revise the requirements when necessary. Final remedial measures limits shall be established by Board action once compliance with Provisions C.3, C.4 and C.5 are achieved.

I, Roger B. James, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on August 20, 1986.

Lawrence P. Kolb
for
ROGER B. JAMES
Executive Officer

Attachment: Site Map




# Attachment 1